



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/720,189

11/25/2003

Steven T. Fink

245344US6YA

4219

22850

7590

09/22/2006

C. IRVIN MCCLELLAND
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

CROWELL, ANNA M

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/720,189	Applicant(s) FINK, STEVEN T.	
	Examiner Michelle Crowell	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on July 5, 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-21 is/are pending in the application.
- 4a) Of the above claim(s) 4,5,18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,6,7,9-17,20 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 4, 5, 18, and 19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on January 19, 2006.
2. Applicant's election with traverse of Species I, claims 1-4 and 6-11 is acknowledged. The traversal is on the ground(s) that no reasons were given in the Restriction Requirement as to why the claims are independent and/or distinct. This is not found persuasive because where two or more species are claimed, a requirement for restriction to a single species is proper if the species are mutually exclusive. Additionally, the search required for the features of the elected species is not co-extensive with the search required for the features of the non-elected species.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

Art Unit: 1763

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 3, 6, 9-17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (J.P. 05-140771) in view of Takagi (U.S. 6,676,759).

Referring to Drawing 1 and paragraph [0012]-[0014], Yamaguchi et al. teaches a plasma processing system comprising: a process chamber 2 (par.[0014]-Drawing 1); an upper electrode assembly 12 (par.[0002], [0004]-Drawing 1); a fluid flow control member 24 (par.[0013]); and a chuck assembly 6 including a plurality of lift pin assemblies 26 (par.[0014]-Drawing 1), for lifting the fluid flow control member at least one location, each lift pin assembly including a lift pin to directly lift the fluid flow control member.

Yamaguchi fails to explicitly show that the fluid flow control member includes a plurality of recesses and that a lift pin is configured to engage with a respective recess of the fluid flow control member.

Referring to Figures 3A, 3B, 6A, 6B, column 5, lines 19-27, Takagi teaches a processing system wherein a member 32 or 132, 133 includes a plurality of recesses 66 and a lift pin 48 is configured to engage with a respective recess of the member. The recess allows for a secure fit for the lift pin. Additionally, this is an alternate and equivalent arrangement for lifting a member. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid flow control member of Yamaguchi to include a recess as shown in Takagi so that the lift pin is configured to engage with a respective recess of the fluid flow

Art Unit: 1763

control member since this an alternate and equivalent arrangement for lifting a member which provides a secure fit between the recess and the lift pin.

With respect to claims 3 and 17, the apparatus of Yamaguchi in view of Takagi further teaches the plasma processing system further includes that the fluid flow control member comprises a focus ring 24 (Yamaguchi, par.[0013]).

With respect to claims 6 and 20, the apparatus of Yamaguchi in view of Takagi further teaches the plasma processing system further includes that the lift pins 26 of each of the plurality of lift pin assemblies are lifted simultaneously (Yamaguchi, Drawing 1).

With respect to claim 9, the apparatus of Yamaguchi in view of Takagi further teaches the plasma processing system further comprises a vacuum port 4 located next to at least one of the plurality of lift pins (Yamaguchi, Drawing 1).

With respect to claim 10, the apparatus of Yamaguchi in view of Takagi further teaches in a movable focus ring the improvement comprising: a hole 60 for facilitating lifting of the focus ring by lift pins (Takagi, col. 5, lines 13-17).

With respect to claim 11, the apparatus of Yamaguchi in view of Takagi further teaches in a movable focus ring the improvement comprising: a recess 66 for facilitating lifting of the focus ring by lift pins (Takagi, col. 5, lines 19-27).

With respect to Claims 12 and 15, the apparatus of Yamaguchi in view of Takagi further teaches the plasma processing system of claim 1, wherein the lift pin 48 extends through a horizontal surface of the chuck assembly 22 when the lift pin is fully retracted (Takagi, Fig. 3B or 6B).

With respect to Claims 13 and 16, the apparatus of Yamaguchi in view of Takagi further teaches the plasma processing system of claim 12, wherein the lift pin 48 engages the respective recesses 66 of the fluid flow control member when the lift pin is fully retracted (Takagi, Fig. 3B or 6B).

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (J.P. 05-140771) in view of Takagi (U.S. 6,676,759) as applied to claims 1, 3, 6, 9-17, and 20 above, and further in view of Kaminishizono (JP 2000049100 A).

The teachings of Yamaguchi et al. in view of Takagi have been discussed above.

Additionally, Yamaguchi et al. in view of Takagi teaches that the chuck assembly includes an RF electrode 6 (par.[0013]).

Yamaguchi et al. fails to specifically teach an electrostatic clamping electrode.

Referring to the abstract, Kaminishizono teaches a plasma processing system wherein the wafer 5 is held to the lower electrode 3 by electrostatic clamping electrode. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the lower electrode of Yamaguchi et al. in view of Takagi with an electrostatic clamping electrode as taught by Kaminishizono in order to ensure that the wafer is securely held onto the lower electrode.

7. Claims 7 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. (J.P. 05-140771) in view of Takagi (U.S. 6,676,759) as applied to claims 1, 3, 6, 9-17, and 20 above, and further in view of Koike (U.S. 2002/0072240 A1).

The teachings of Yamaguchi et al. in view of Takagi have been discussed above.

Yamaguchi et al. in view of Takagi fail to specifically teach the lift pins are controllable to be lifted individually.

Referring to paragraphs [0051]-[0054], Koike teaches a plasma processing apparatus wherein each lift mechanism is controlled individually in order for the processing rate to remain constant [0064]. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention for each lift pin of Yamaguchi et al. in view of Takagi to be lifted individually as taught by Koike in order for the processing rate to remain constant.

8. Claims 1, 3, 6, 9-17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. (J.P. 2001-230239) in view of Takagi (U.S. 6,676,759).

Referring to Drawings 1 & 5 and paragraph [0022]-[0038], Morimoto et al. teaches a plasma processing system comprising: a process chamber 2 (par.[0023]-Drawing 1); an upper electrode assembly 4 (Drawing 1, par.[0024]); a fluid flow control member 31 (par.[0033]); and a chuck assembly 30 including a plurality of lift pin assemblies 53 (par.[0038]-Drawing 1), for lifting the fluid flow control member at least one location, each lift pin assembly including a lift pin to directly lift the fluid flow control member.

Morimoto fails to explicitly show that the fluid flow control member includes a plurality of recesses and that a lift pin is configured to engage with a respective recess of the fluid flow control member.

Referring to Figures 3A, 3B, 6A, 6B, column 5, lines 19-27, Takagi teaches a processing system wherein a member 32 or 132, 133 includes a plurality of recesses 66 and a lift pin 48 is

Art Unit: 1763

configured to engage with a respective recess of the member. The recess allows for a secure fit for the lift pin. Additionally, this is an alternate and equivalent arrangement for lifting a member. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid flow control member of Morimoto to include a recess as shown in Takagi so that the lift pin is configured to engage with a respective recess of the fluid flow control member since this an alternate and equivalent arrangement for lifting a member which provides a secure fit between the recess and the lift pin.

With respect to claims 3 and 17, the apparatus of Morimoto in view of Takagi further teaches the plasma processing system further includes that the fluid flow control member comprises a focus ring 31 (Morimoto, Drawing 1).

With respect to claims 6 and 20, the apparatus of Morimoto in view of Takagi further teaches the plasma processing system further includes that the lift pins 53 of each of the plurality of lift pin assemblies are lifted simultaneously (Morimoto, Drawing 1).

With respect to claim 9, the apparatus of Morimoto in view of Takagi further teaches the plasma processing system further comprises a vacuum port 20 located next to at least one of the plurality of lift pins (Morimoto, Drawing 1, par.[0030]).

With respect to claim 10, the apparatus of Morimoto in view of Takagi further teaches in a movable focus ring the improvement comprising: a hole 60 for facilitating lifting of the focus ring by lift pins (Takagi, col. 5, lines 13-17).

With respect to claim 11, the apparatus of Morimoto in view of Takagi further teaches in a movable focus ring the improvement comprising: a recess 66 for facilitating lifting of the focus ring by lift pins (Takagi, col. 5, lines 19-27).

Art Unit: 1763

With respect to Claims 12 and 15, the apparatus of Morimoto in view of Takagi further teaches the plasma processing system of claim 1, wherein the lift pin 48 extends through a horizontal surface of the chuck assembly 22 when the lift pin is fully retracted (Takagi, Fig. 3B or 6B).

With respect to Claims 13 and 16, the apparatus of Morimoto in view of Takagi further teaches the plasma processing system of claim 12, wherein the lift pin 48 engages the respective recesses 66 of the fluid flow control member when the lift pin is fully retracted (Takagi, Fig. 3B or 6B).

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. (J.P. 2001-230239) in view of Takagi (U.S. 6,676,759) as applied to claims 1, 3, 6, 9-17, and 20 above, and further in view of Kaminishizono (JP 2000049100 A).

The teachings of Morimoto et al. in view of Takagi have been discussed above.

Additionally, Morimoto et al. in view of Takagi teaches that the chuck assembly includes an RF electrode 30 (par.[0024]).

Morimoto fails to specifically teach an electrostatic clamping electrode.

Referring to the abstract, Kaminishizono teaches a plasma processing system wherein the wafer 5 is held to the lower electrode 3 by electrostatic clamping electrode. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the lower electrode of Morimoto et al. in view of Takagi with an electrostatic clamping electrode as taught by Kaminishizono in order to ensure that the wafer is securely held onto the lower electrode.

Art Unit: 1763

10. Claims 7 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morimoto et al. (J.P. 2001-230239) in view of Takagi (U.S. 6,676,759) as applied to claims 1, 3, 6, 9-17, and 20 above, and further in view of Koike (U.S. 2002/0072240 A1).

The teachings of Morimoto et al. in view of Takagi have been discussed above.

Morimoto et al. in view of Takagi fail to specifically teach the lift pins are controllable to be lifted individually.

Referring to paragraphs [0051]-[0054], Koike teaches a plasma processing apparatus wherein each lift mechanism is controlled individually in order for the processing rate to remain constant [0064]. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention for each lift pin of Morimoto et al. in view of Takagi to be lifted individually as taught by Koike in order for the processing rate to remain constant.

Response to Arguments

11. Applicant's arguments with respect to claims 1-3, 6-7, 9-17, and 20-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**


Art Unit: 1763


MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (571) 272-1432. The examiner can normally be reached on M-F (9:30 -6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michelle Crowell 
Patent Examiner
Art Unit 1763

 Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763



RAM N. KACKAR, P.E.
PRIMARY EXAMINER